

PATENT ABSTRACTS OF JAPAN

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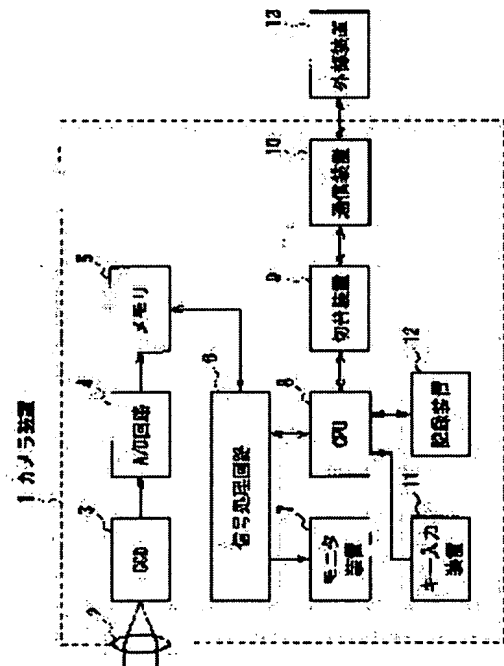
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(54) IMAGING DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an imaging device such as a camera that can select the case in which an external device recognizes the imaging device as a mass storage device or the case in which the external device recognizes the imaging device as a camera.

SOLUTION: The camera 1 is provided with a changeover device 9 that allows the external device 13 to recognize the imaging device as the mass storage device or the camera and an operating mode and a key operation of the camera 1 select either of both the cases.



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CLAIMS

[Claim(s)]

[Claim 1] In the imaging instrument which has the function which accumulates the image data obtained by carrying out photo electric conversion of the photoed optical image A record means to record the image data which comes to carry out photo electric conversion of the optical image on a record medium, In case it communicates with an external device, the means of communications which can be communicated, and the above-mentioned external device by connecting with an external device, the above-mentioned external device is carried out. The imaging instrument characterized by having the change means which changes whether this imaging instrument is made to recognize as a bulk-store device, or it is made to recognize as an image pickup device.

[Claim 2] Based on the mode of operation of the above-mentioned imaging instrument set to an imaging instrument according to claim 1, and current in the above-mentioned change means, it is the imaging instrument characterized by changing the mode made to recognize to the above-mentioned external device.

[Claim 3] It is the imaging instrument to which it is characterized by changing recognition mode in which, as for the above-mentioned change means, the above-mentioned external storage recognizes this imaging instrument by external input actuation in an imaging instrument according to claim 1.

[Claim 4] It is the imaging instrument characterized by outputting the instruction which restricts actuation of the predetermined function of the above-mentioned imaging instrument to the above-mentioned imaging instrument when the mode which changed the above-mentioned change means in the imaging instrument according to claim 1 is a bulk-store device.

[Claim 5] It is the imaging instrument which the above-mentioned imaging instrument is camera equipment, and is characterized by the means of communications with the above-mentioned external device being RS232C, USB (Universal Serial Bus), SCSI, or IEEE1394 in an imaging instrument according to claim 1 to 4.

[Claim 6] The imaging instrument characterized by the above-mentioned record medium being a disk-like record medium in an imaging instrument according to claim 1 to 5.

[Claim 7] The imaging instrument characterized by the above-mentioned record medium being a tape-like record medium in an imaging instrument according to claim 1 to 5.

[Claim 8] The imaging instrument with which it is characterized by being a PCMCIA card with the above-mentioned removable record medium, CF card, SmartMedia, SD card, or built-in semiconductor memory in an imaging instrument according to claim 1 to 5.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] About camera equipment, in case especially this invention communicates with an external device in the thing equipped with the optoelectric transducer which carries out photo electric conversion of the photoed optical image, it relates to what has the configuration which can treat camera equipment as large capacity storage (mass storage device) from an external device.

[0002]

[Description of the Prior Art] As shown in JP,2000-307911,A, when the file information of camera equipment is updated in the case of the camera equipment recognized from an external device as a conventional mass storage device, by sending the status to a personal computer, it tells that file information was updated by the personal computer, updating of presenting of the file information on a personal computer is enabled in an instant, and there is a thing which enabled it to use the file information updated in an instant. By doing in this way, use with a personal computer can be made easy for the storage media for image recording with which camera equipment is equipped as an archive medium of external storage.

[0003]

[Problem(s) to be Solved by the Invention] When the conventional imaging instrument (camera equipment) is constituted as mentioned above and camera equipment is made to recognize as a mass storage device from an external device like PC Although it is possible to use the image information saved in the record medium of camera equipment as file information There was a trouble that a function by which the camera equipment which is image pickup devices, such as control of the camera equipment from an external device and automatic transfer of the image by the key stroke of camera equipment, is characterized was unrealizable etc.

[0004] This invention was made in order to cancel the above troubles, and it aims at offering the imaging instrument equipped with the configuration which can enable actuation as a imaging device from an external device while it is seen from an external device and can recognize an imaging instrument as a mass storage device.

[0005]

[Means for Solving the Problem] The imaging instrument concerning claim 1 of this invention In the imaging instrument which has the function which accumulates the image data obtained by carrying out photo electric conversion of the photoed optical image A record means to record the image data which comes to carry out photo electric conversion of the optical image on a record medium, In case it communicates with an external device, the means of communications which can be communicated, and the above-mentioned external device by connecting with an external device, the above-mentioned external device is carried out and it has the change means which changes whether this imaging instrument is made to recognize as a bulk-store device, or it is made to recognize as an image pickup device.

[0006] Moreover, the imaging instrument concerning claim 2 of this invention is set to an imaging instrument according to claim 1, and the above-mentioned change means changes the mode made to recognize to the above-mentioned external device based on the current mode of

operation of the above-mentioned imaging instrument.

[0007] Moreover, in an imaging instrument according to claim 1, as for the imaging instrument concerning claim 3 of this invention, the above-mentioned external storage changes recognition mode in which this imaging instrument is recognized, by external input actuation, as for the above-mentioned change means.

[0008] Moreover, in an imaging instrument according to claim 1, the imaging instrument concerning claim 4 of this invention outputs the instruction which restricts actuation of the predetermined function of the above-mentioned imaging instrument to the above-mentioned imaging instrument, when the mode which changed the above-mentioned change means is a bulk-store device.

[0009] Moreover, in an imaging instrument according to claim 1 to 4, the above-mentioned imaging instrument of the imaging instrument concerning claim 5 of this invention is camera equipment, and the means of communications with the above-mentioned external device is RS232C, USB (Universal Serial Bus), SCSI, or IEEE1394.

[0010] Moreover, in an imaging instrument according to claim 1 to 5, the above-mentioned record medium of the imaging instrument concerning claim 6 of this invention is a disk-like record medium.

[0011] Moreover, in an imaging instrument according to claim 1 to 5, the above-mentioned record medium of the imaging instrument concerning claim 7 of this invention is a tape-like record medium.

[0012] Moreover, the imaging instrument concerning claim 8 of this invention is a PCMCIA card with the above-mentioned removable record medium, CF card, SmartMedia, SD card, or built-in semiconductor memory in an imaging instrument according to claim 1 to 5.

[0013]

[Embodiment of the Invention] (Gestalt 1 of operation) The camera equipment which is an imaging instrument applied to the gestalt 1 of operation of this invention based on a drawing is explained hereafter. Drawing 1 is the block diagram showing the configuration of the camera equipment in the gestalt of this operation. Drawing 2 is drawing having shown the relation at the time of connecting said camera equipment and said external device using a USB (Universal Serial Bus) cable, drawing 2 (a) is drawing at the time of using said camera equipment as a mass storage device, and drawing 2 (b) is drawing at the time of using said camera equipment as a imaging device.

[0014] In above-mentioned drawing 1, a taking lens 2 is attached in camera equipment 1, and CCD3 which is the optoelectric transducer which carries out photo electric conversion of the optical image photoed on the optical axis of this taking lens 2 is arranged. This image data by which photo electric conversion was carried out is changed into digital data from analog data by the latter A/D circuit 4.

[0015] And the image data changed into the digital data is stored in memory 5, and the image data stored in memory 5 is further compressed by the digital disposal circuit 6 which carries out compression elongation of the data.

[0016] The image data compressed into said digital disposal circuit 6 is saved at a record medium by the recording device 12 controlled by CPU8. Data are elongated by said digital disposal circuit 6 by control of said CPU8, and the image data recorded on the record medium can be displayed with a monitoring device 7.

[0017] Said CPU8 reads the condition of a key from key input equipment 11, determines a mode of operation, notifies the information to a transfer device 9, and has composition which changes whether said transfer device 9 is made to recognize based on it as whether an external device 13 is made to recognize said camera equipment 1 as a mass storage device, and a imaging device.

[0018] Communication devices 10 are said external device 13 and equipment which can exchange data, and according to the device recognition mode changed with said transfer device 9, the data in a record medium can be transmitted to said external device 13, or they can receive the data for recording on the record medium in said camera equipment 1 from said external device 13.

[0019] Next, it explains, making it contrast with drawing 1 using drawing 2. Drawing 2 (a) is a conceptual diagram at the time of making said camera equipment 1 recognize as a mass storage device with said transfer device 9, in view of said external device 13, as file information, easily, it can move and the image information currently recorded in the record medium of said camera equipment 1 can copy it to the record medium in said external device 13. As the above-mentioned external device, PC controlled by general-purpose application software can be considered, for example, and the mass storage class driver for recognizing camera equipment 1 as a mass storage device, and controlling it is equipped here.

[0020] Drawing 2 (b) is a conceptual diagram at the time of making said camera equipment 1 recognize as a imaging device with said transfer device 9, in view of said external device 13. The application software of said camera equipment 1 dedication is included in said external device 13. By publishing the command of the dedication of said camera equipment 1 from said external device 13, remote operation of camera equipment 1, actuation which transmits and displays automatically the image currently displayed on said monitoring device 7 of said camera equipment 1 on said external device 13 can be performed.

[0021] As the above-mentioned external device, PC controlled by exclusive application software can be considered, for example, and the imaging class driver for recognizing camera equipment 1 as a imaging device, and controlling it is equipped here.

[0022] In the case of drawing 2, USB (Universal Serial Bus) is used for the communication link with said camera equipment 1 and said external device 13. Said camera equipment 1 has two products ID of a mass storage device and a imaging device. When two, the mass storage class driver corresponding to each of said product ID and a imaging device driver, are included in said external device 13, Said camera equipment 1 has only one product ID, but can consider the case where the driver which included the function of both mass storage class and imaging class in said external device 13 is incorporated.

[0023] Here, said camera equipment 1 has two products, a mass storage device and a imaging device, ID, and the actuation is explained about the case where two, the mass storage class driver corresponding to each of said product ID and a imaging device driver, are included in said external device 13.

[0024] It is in default device mode first decided beforehand that a USB cable is connected between said camera equipment 1 and said external devices 13, ENYUMERESHON is started, and said external device 13 recognizes said camera equipment 1 in the device mode.

[0025] Then, when the need for modification in device mode by modification and the key stroke of the mode of operation of said camera equipment 1 occurs, using the information from said CPU8, said change means 9 cuts USB connection electrically, and once connects again. At the time of ENYUMERESHON, said camera equipment 1 is changed into the product ID corresponding to another device mode, and answers so that it may be newly recognized as another device mode from said external device 13 in the case of re-connection. Then, in said external device 13, the driver corresponding to the changed product ID is called, and said camera equipment 1 and communication link are attained in the device mode chosen newly.

[0026] Again, same actuation is performed also when returning to the original device mode. In addition, in incorporating the driver which equipped said external device 13 with the function of both mass storage class and imaging class, when it is not necessary to once cut electric USB connection, and it says for acquiring the condition of said camera equipment 1 from said external device 13 and said camera equipment 1 carries out the change response in device mode, it notifies the change in device mode to said external device 13.

[0027] Based on the contents of the notice of a change in the above-mentioned device mode, said external device 13 should just choose whether said camera equipment 1 is recognized as a mass storage device, or it judges as a imaging device.

[0028] Drawing 3 is drawing showing a flow of operation in case camera equipment 1 is in the condition of a imaging device. When judged with said camera equipment 1 being in the mode which can be photoed and recorded in step S301 Progress to step S302, change said transfer device 9 to imaging device mode, and said camera equipment 1 is made to recognize as a imaging device from said external device 13. The application software of said camera equipment 1

dedication is included in the operation system of said external device 13. With the command of dedication The image which operates photography initiation, a white balance, a diaphragm, a setup, zoom actuation of an automatic focus, etc. by remote control from said external device 13, or is displayed on said monitoring device 7 of said camera equipment 1 by the key stroke of said camera equipment 1 Processing is ended as it can transmit to said external device 13 automatically.

[0029] On the other hand, when judged with it not being among a recording mode in the above-mentioned step S301 Progress to step S303, and when judged with said camera equipment 1 being in a playback mode, here Progress to step S304, change said transfer device 9 to mass storage device mode, and said camera equipment 1 is made to recognize as a mass storage device from said external device 13. It considers as file information, and it moves to the record medium in said external device 13, or the image information currently recorded on the record medium in said camera equipment 1 is copied, and it enables it to use it.

[0030] Moreover, when judged with it not being among a playback mode in the above-mentioned step S303 (i.e., when equipment is not being reproduced [be / it] during record, either), it will progress to step S302, equipment will be set to imaging device mode, and processing will be ended.

[0031] In addition, although here explained the example of a change of the mode of operation of the camera equipment 1 seen from the external device 13 in case the current mode is in record and a playback mode, an approach to change the mode of operation of this camera equipment 1 is not restricted to this, change conditions are arbitrary, and it cannot be overemphasized that it can choose freely.

[0032] Thus, in case it communicates with an external device 13 to camera equipment 1 according to the gestalt 1 of this operation Since the change means 9 which changes whether camera equipment 1 is made to recognize as a mass storage device or it is made to recognize as a imaging device was established While being able to use the file information, using camera equipment 1 as a mass storage device, the photography, record, playback, etc. are controlled from an external device 13, and camera equipment can be used also as camera equipment.

[0033] (Gestalt 2 of operation) The camera equipment which is an imaging instrument concerning the gestalt 2 of operation of this invention is explained below. Although the fundamental configuration is the same as that of the camera equipment shown by drawing 1 , with the gestalt 2 of this operation, the point of being made to judge the change of a transfer device 9 using the key information from key input equipment 11 is the description.

[0034] About the key hereafter used with the above-mentioned input unit 11 which explains actuation using drawing 4 , it is good for it to be selectable and also make [may install the physical key which actually corresponded, and] in a menu format. By this approach, since a user can choose mass storage mode and imaging mode as arbitration by manual actuation, a user's broader operation original as camera equipment can be considered.

[0035] In the gestalt 1 of said operation, when said camera equipment 1 has been recognized as a mass storage device, from said external device 13, the monitor of the list of the image files in the archive medium of said camera equipment 1 can only be carried out, and the condition or mode of operation of a key of said camera equipment 1 cannot be recognized from said external device 13.

[0036] Therefore, when camera equipment 1 is recognized as a mass storage device, for example, when said camera equipment 1 performs photography and record actuation by own key input and said external device 13 tends to communicate with said camera equipment 1 to coincidence, contention of processing occurs in said camera equipment 1, and there is a possibility of causing the actuation with either unusual at least of said camera equipment 1 or said external device 13.

[0037] In order to prevent it, when said camera equipment 1 has been recognized as a mass storage device, in step S401, in said camera equipment 1, key strokes other than a key required in order to change device mode to a imaging device are forbidden, and it progresses to step S403, and sets to mass storage device mode.

[0038] On the other hand, from said external device 13, when said camera equipment 1 is in

imaging device mode, since it is controlled by application software of dedication of said camera equipment 1, the key stroke and mode of operation of said camera equipment 1 can be recognized, and photography of said camera equipment 1 and record actuation do not compete with the communication link with said external device 13. Therefore, it progresses to step S402, and sets to imaging device mode, and the key stroke of said camera equipment 1 is not forbidden.

[0039] Thus, since camera equipment 1 is changed to mass storage device mode and imaging device mode with key input equipment 11 and it enabled it to set up according to the gestalt 2 of this operation When recognized in mass storage device mode, actuation by imaging device mode is performed carelessly, and generating of the trouble of the camera equipment 1 by the processing demanded from camera equipment 1 competing or an external device 13 can be prevented.

[0040] In addition, although the gestalt of each above-mentioned implementation explained the case where connection between equipment was USB connection, it cannot be overemphasized that it is applicable also like other interfaces which can realize the same function, or connection with a protocol.

[0041] Moreover, it is applicable similarly about the device which has the function of two device class of not only camera equipment but an imaging instrument, and the mass storage device which stores that data about the gestalt of this operation.

[0042]

[Effect of the Invention] As mentioned above, according to the imaging instrument concerning this invention, it sets to the imaging instrument which has the function which accumulates the image data obtained by carrying out photo electric conversion of the photoed optical image. A record means to record the image data which comes to carry out photo electric conversion of the optical image on a record medium, In case it communicates with an external device, the means of communications which can be communicated, and the above-mentioned external device by connecting with an external device, the above-mentioned external device is carried out. Since it should have the change means which changes whether this imaging instrument is made to recognize as a bulk-store device, or it is made to recognize as an image pickup device The image file recorded on the record medium of an imaging instrument is moved to the record medium in an external device. The effectiveness referred to as being able to realize easily file manipulation of copying and being able to realize easily a function original with cameras, such as remote control of the imaging instrument from an external device and automatic transfer of the image by the key input from an imaging instrument, is acquired.

[0043] Moreover, according to the imaging instrument concerning this invention, the abnormality actuation by the processing demanded by the mode of operation of an imaging instrument competing, since it was made the above-mentioned change means output the instruction which restricts actuation of the predetermined function of the above-mentioned imaging instrument to the above-mentioned imaging instrument when the changed mode was a bulk-store device can prevent, and the effectiveness say that the user-friendliness as equipment can improve is acquired.

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TECHNICAL FIELD

[Field of the Invention] About camera equipment, in case especially this invention communicates with an external device in the thing equipped with the optoelectric transducer which carries out photo electric conversion of the photoed optical image, it relates to what has the configuration which can treat camera equipment as large capacity storage (mass storage device) from an external device.

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PRIOR ART

[Description of the Prior Art] As shown in JP,2000-307911,A, when the file information of camera equipment is updated in the case of the camera equipment recognized from an external device as a conventional mass storage device, by sending the status to a personal computer, it tells that file information was updated by the personal computer, updating of presenting of the file information on a personal computer is enabled in an instant, and there is a thing which enabled it to use the file information updated in an instant. By doing in this way, use with a personal computer can be made easy for the storage media for image recording with which camera equipment is equipped as an archive medium of external storage.

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EFFECT OF THE INVENTION

[Effect of the Invention] As mentioned above, according to the imaging instrument concerning this invention, it sets to the imaging instrument which has the function which accumulates the image data obtained by carrying out photo electric conversion of the photoed optical image. A record means to record the image data which comes to carry out photo electric conversion of the optical image on a record medium, In case it communicates with an external device, the means of communications which can be communicated, and the above-mentioned external device by connecting with an external device, the above-mentioned external device is carried out. Since it should have the change means which changes whether this imaging instrument is made to recognize as a bulk-store device, or it is made to recognize as an image pickup device The image file recorded on the record medium of an imaging instrument is moved to the record medium in an external device. The effectiveness referred to as being able to realize easily file manipulation of copying and being able to realize easily a function original with cameras, such as remote control of the imaging instrument from an external device and automatic transfer of the image by the key input from an imaging instrument, is acquired.

[0043] Moreover, according to the imaging instrument concerning this invention, the abnormality actuation by the processing demanded by the mode of operation of an imaging instrument competing, since it was made the above-mentioned change means output the instruction which restricts actuation of the predetermined function of the above-mentioned imaging instrument to the above-mentioned imaging instrument when the changed mode was a bulk-store device can prevent, and the effectiveness say that the user-friendliness as equipment can improve is acquired.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] When the conventional imaging instrument (camera equipment) is constituted as mentioned above and camera equipment is made to recognize as a mass storage device from an external device like PC Although it is possible to use the image information saved in the record medium of camera equipment as file information There was a trouble that a function by which the camera equipment which is image pickup devices, such as control of the camera equipment from an external device and automatic transfer of the image by the key stroke of camera equipment, is characterized was unrealizable etc.

[0004] This invention was made in order to cancel the above troubles, and it aims at offering the imaging instrument equipped with the configuration which can enable actuation as a imaging device from an external device while it is seen from an external device and can recognize an imaging instrument as a mass storage device.

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MEANS

[Means for Solving the Problem] The imaging instrument concerning claim 1 of this invention In the imaging instrument which has the function which accumulates the image data obtained by carrying out photo electric conversion of the photoed optical image A record means to record the image data which comes to carry out photo electric conversion of the optical image on a record medium, In case it communicates with an external device, the means of communications which can be communicated, and the above-mentioned external device by connecting with an external device, the above-mentioned external device is carried out and it has the change means which changes whether this imaging instrument is made to recognize as a bulk-store device, or it is made to recognize as an image pickup device.

[0006] Moreover, the imaging instrument concerning claim 2 of this invention is set to an imaging instrument according to claim 1, and the above-mentioned change means changes the mode made to recognize to the above-mentioned external device based on the current mode of operation of the above-mentioned imaging instrument.

[0007] Moreover, in an imaging instrument according to claim 1, as for the imaging instrument concerning claim 3 of this invention, the above-mentioned external storage changes recognition mode in which this imaging instrument is recognized, by external input actuation, as for the above-mentioned change means.

[0008] Moreover, in an imaging instrument according to claim 1, the imaging instrument concerning claim 4 of this invention outputs the instruction which restricts actuation of the predetermined function of the above-mentioned imaging instrument to the above-mentioned imaging instrument, when the mode which changed the above-mentioned change means is a bulk-store device.

[0009] Moreover, in an imaging instrument according to claim 1 to 4, the above-mentioned imaging instrument of the imaging instrument concerning claim 5 of this invention is camera equipment, and the means of communications with the above-mentioned external device is RS232C, USB (Universal Serial Bus), SCSI, or IEEE1394.

[0010] Moreover, in an imaging instrument according to claim 1 to 5, the above-mentioned record medium of the imaging instrument concerning claim 6 of this invention is a disk-like record medium.

[0011] Moreover, in an imaging instrument according to claim 1 to 5, the above-mentioned record medium of the imaging instrument concerning claim 7 of this invention is a tape-like record medium.

[0012] Moreover, the imaging instrument concerning claim 8 of this invention is a PCMCIA card with the above-mentioned removable record medium, CF card, SmartMedia, SD card, or built-in semiconductor memory in an imaging instrument according to claim 1 to 5.

[0013]

[Embodiment of the Invention] (Gestalt 1 of operation) The camera equipment which is an imaging instrument applied to the gestalt 1 of operation of this invention based on a drawing is explained hereafter. Drawing 1 is the block diagram showing the configuration of the camera equipment in the gestalt of this operation. Drawing 2 is drawing having shown the relation at the time of connecting said camera equipment and said external device using a USB (Universal Serial

Bus) cable, drawing 2 (a) is drawing at the time of using said camera equipment as a mass storage device, and drawing 2 (b) is drawing at the time of using said camera equipment as a imaging device.

[0014] In above-mentioned drawing 1 , a taking lens 2 is attached in camera equipment 1, and CCD3 which is the optoelectric transducer which carries out photo electric conversion of the optical image photoed on the optical axis of this taking lens 2 is arranged. This image data by which photo electric conversion was carried out is changed into digital data from analog data by the latter A/D circuit 4.

[0015] And the image data changed into the digital data is stored in memory 5, and the image data stored in memory 5 is further compressed by the digital disposal circuit 6 which carries out compression elongation of the data.

[0016] The image data compressed into said digital disposal circuit 6 is saved at a record medium by the recording device 12 controlled by CPU8. Data are elongated by said digital disposal circuit 6 by control of said CPU8, and the image data recorded on the record medium can be displayed with a monitoring device 7.

[0017] Said CPU8 reads the condition of a key from key input equipment 11, determines a mode of operation, notifies the information to a transfer device 9, and has composition which changes whether said transfer device 9 is made to recognize based on it as whether an external device 13 is made to recognize said camera equipment 1 as a mass storage device, and a imaging device.

[0018] Communication devices 10 are said external device 13 and equipment which can exchange data, and according to the device recognition mode changed with said transfer device 9, the data in a record medium can be transmitted to said external device 13, or they can receive the data for recording on the record medium in said camera equipment 1 from said external device 13.

[0019] Next, it explains, making it contrast with drawing 1 using drawing 2 . Drawing 2 (a) is a conceptual diagram at the time of making said camera equipment 1 recognize as a mass storage device with said transfer device 9, in view of said external device 13, as file information, easily, it can move and the image information currently recorded in the record medium of said camera equipment 1 can copy it to the record medium in said external device 13. As the above-mentioned external device, PC controlled by general-purpose application software can be considered, for example, and the mass storage class driver for recognizing camera equipment 1 as a mass storage device, and controlling it is equipped here.

[0020] Drawing 2 (b) is a conceptual diagram at the time of making said camera equipment 1 recognize as a imaging device with said transfer device 9, in view of said external device 13. The application software of said camera equipment 1 dedication is included in said external device 13. By publishing the command of the dedication of said camera equipment 1 from said external device 13, remote operation of camera equipment 1, actuation which transmits and displays automatically the image currently displayed on said monitoring device 7 of said camera equipment 1 on said external device 13 can be performed.

[0021] As the above-mentioned external device, PC controlled by exclusive application software can be considered, for example, and the imaging class driver for recognizing camera equipment 1 as a imaging device, and controlling it is equipped here.

[0022] In the case of drawing 2 , USB (Universal Serial Bus) is used for the communication link with said camera equipment 1 and said external device 13. Said camera equipment 1 has two products ID of a mass storage device and a imaging device. When two, the mass storage class driver corresponding to each of said product ID and a imaging device driver, are included in said external device 13, Said camera equipment 1 has only one product ID, but can consider the case where the driver which included the function of both mass storage class and imaging class in said external device 13 is incorporated.

[0023] Here, said camera equipment 1 has two products, a mass storage device and a imaging device, ID, and the actuation is explained about the case where two, the mass storage class driver corresponding to each of said product ID and a imaging device driver, are included in said external device 13.

[0024] It is in default device mode first decided beforehand that a USB cable is connected between said camera equipment 1 and said external devices 13, ENYUMERESHON is started, and said external device 13 recognizes said camera equipment 1 in the device mode.

[0025] Then, when the need for modification in device mode by modification and the key stroke of the mode of operation of said camera equipment 1 occurs, using the information from said CPU8, said change means 9 cuts USB connection electrically, and once connects again. At the time of ENYUMERESHON, said camera equipment 1 is changed into the product ID corresponding to another device mode, and answers so that it may be newly recognized as another device mode from said external device 13 in the case of re-connection. Then, in said external device 13, the driver corresponding to the changed product ID is called, and said camera equipment 1 and communication link are attained in the device mode chosen newly.

[0026] Again, same actuation is performed also when returning to the original device mode. In addition, in incorporating the driver which equipped said external device 13 with the function of both mass storage class and imaging class, when it is not necessary to once cut electric USB connection, and it says for acquiring the condition of said camera equipment 1 from said external device 13 and said camera equipment 1 carries out the change response in device mode, it notifies the change in device mode to said external device 13.

[0027] Based on the contents of the notice of a change in the above-mentioned device mode, said external device 13 should just choose whether said camera equipment 1 is recognized as a mass storage device, or it judges as a imaging device.

[0028] Drawing 3 is drawing showing a flow of operation in case camera equipment 1 is in the condition of a imaging device. When judged with said camera equipment 1 being in the mode which can be photoed and recorded in step S301 Progress to step S302, change said transfer device 9 to imaging device mode, and said camera equipment 1 is made to recognize as a imaging device from said external device 13. The application software of said camera equipment 1 dedication is included in the operation system of said external device 13. With the command of dedication The image which operates photography initiation, a white balance, a diaphragm, a setup, zoom actuation of an automatic focus, etc. by remote control from said external device 13, or is displayed on said monitoring device 7 of said camera equipment 1 by the key stroke of said camera equipment 1 Processing is ended as it can transmit to said external device 13 automatically.

[0029] On the other hand, when judged with it not being among a recording mode in the above-mentioned step S301 Progress to step S303, and when judged with said camera equipment 1 being in a playback mode, here Progress to step S304, change said transfer device 9 to mass storage device mode, and said camera equipment 1 is made to recognize as a mass storage device from said external device 13. It considers as file information, and it moves to the record medium in said external device 13, or the image information currently recorded on the record medium in said camera equipment 1 is copied, and it enables it to use it.

[0030] Moreover, when judged with it not being among a playback mode in the above-mentioned step S303 (i.e., when equipment is not being reproduced [be / it] during record, either), it will progress to step S302, equipment will be set to imaging device mode, and processing will be ended.

[0031] In addition, although here explained the example of a change of the mode of operation of the camera equipment 1 seen from the external device 13 in case the current mode is in record and a playback mode, an approach to change the mode of operation of this camera equipment 1 is not restricted to this, change conditions are arbitrary, and it cannot be overemphasized that it can choose freely.

[0032] Thus, in case it communicates with an external device 13 to camera equipment 1 according to the gestalt 1 of this operation Since the change means 9 which changes whether camera equipment 1 is made to recognize as a mass storage device or it is made to recognize as a imaging device was established While being able to use the file information, using camera equipment 1 as a mass storage device, the photography, record, playback, etc. are controlled from an external device 13, and camera equipment can be used also as camera equipment.

[0033] (Gestalt 2 of operation) The camera equipment which is an imaging instrument concerning

the gestalt 2 of operation of this invention is explained below. Although the fundamental configuration is the same as that of the camera equipment shown by drawing 1, with the gestalt 2 of this operation, the point of being made to judge the change of a transfer device 9 using the key information from key input equipment 11 is the description.

[0034] About the key hereafter used with the above-mentioned input unit 11 which explains actuation using drawing 4, it is good for it to be selectable and also make [may install the physical key which actually corresponded, and] in a menu format. By this approach, since a user can choose mass storage mode and imaging mode as arbitration by manual actuation, a user's broader operation original as camera equipment can be considered.

[0035] In the gestalt 1 of said operation, when said camera equipment 1 has been recognized as a mass storage device, from said external device 13, the monitor of the list of the image files in the archive medium of said camera equipment 1 can only be carried out, and the condition or mode of operation of a key of said camera equipment 1 cannot be recognized from said external device 13.

[0036] Therefore, when camera equipment 1 is recognized as a mass storage device, for example, when said camera equipment 1 performs photography and record actuation by own key input and said external device 13 tends to communicate with said camera equipment 1 to coincidence, contention of processing occurs in said camera equipment 1, and there is a possibility of causing the actuation with either unusual at least of said camera equipment 1 or said external device 13.

[0037] In order to prevent it, when said camera equipment 1 has been recognized as a mass storage device, in step S401, in said camera equipment 1, key strokes other than a key required in order to change device mode to a imaging device are forbidden, and it progresses to step S403, and sets to mass storage device mode.

[0038] On the other hand, from said external device 13, when said camera equipment 1 is in imaging device mode, since it is controlled by application software of dedication of said camera equipment 1, the key stroke and mode of operation of said camera equipment 1 can be recognized, and photography of said camera equipment 1 and record actuation do not compete with the communication link with said external device 13. Therefore, it progresses to step S402, and sets to imaging device mode, and the key stroke of said camera equipment 1 is not forbidden.

[0039] Thus, since camera equipment 1 is changed to mass storage device mode and imaging device mode with key input equipment 11 and it enabled it to set up according to the gestalt 2 of this operation When recognized in mass storage device mode, actuation by imaging device mode is performed carelessly, and generating of the trouble of the camera equipment 1 by the processing demanded from camera equipment 1 competing or an external device 13 can be prevented.

[0040] In addition, although the gestalt of each above-mentioned implementation explained the case where connection between equipment was USB connection, it cannot be overemphasized that it is applicable also like other interfaces which can realize the same function, or connection with a protocol.

[0041] Moreover, it is applicable similarly about the device which has the function of two device class of not only camera equipment but an imaging instrument, and the mass storage device which stores that data about the gestalt of this operation.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the configuration of the camera equipment which is an imaging instrument concerning the gestalt 1 of operation of this invention.

[Drawing 2] It is drawing showing the relation between the above-mentioned camera equipment and an external device.

[Drawing 3] In the above-mentioned camera equipment, it is drawing showing a flow of operation in case camera equipment is in the condition of a imaging device.

[Drawing 4] In the above-mentioned camera equipment, it is drawing which indicated the flow explaining the actuation when being made to judge the change of said transfer device using the key information from key input equipment.

[Description of Notations]

1 Camera Equipment

2 Taking Lens

3 CCD

4 A/D Circuit

5 Memory

6 Signal Processing

7 Monitoring Device

8 CPU

9 Transfer Device

10 Communication Device

11 Key Input Equipment

12 Recording Device

13 External Device

[Translation done.]

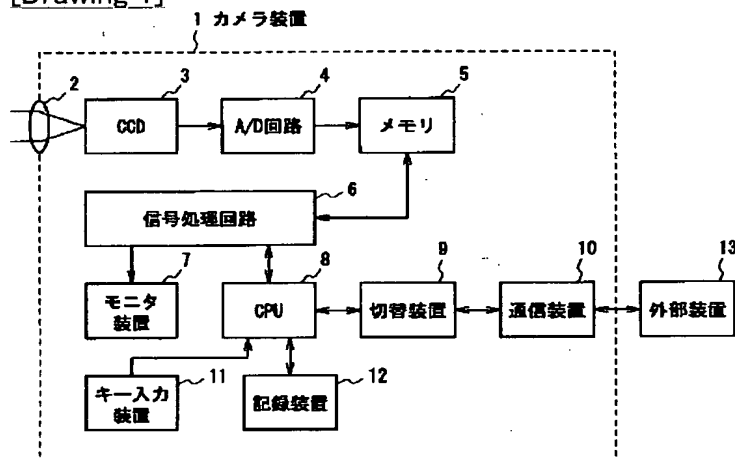
* NOTICES *

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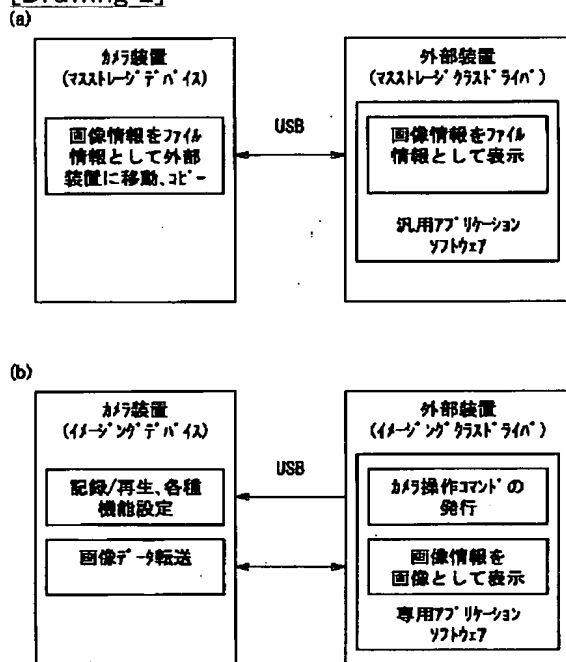
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
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DRAWINGS

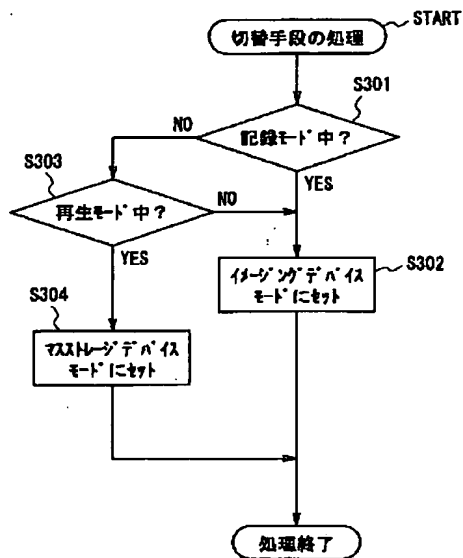
[Drawing 1]



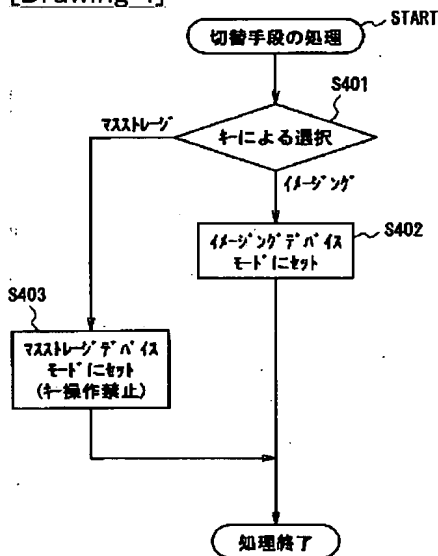
[Drawing 2]



[Drawing 3]



[Drawing 4]



[Translation done.]

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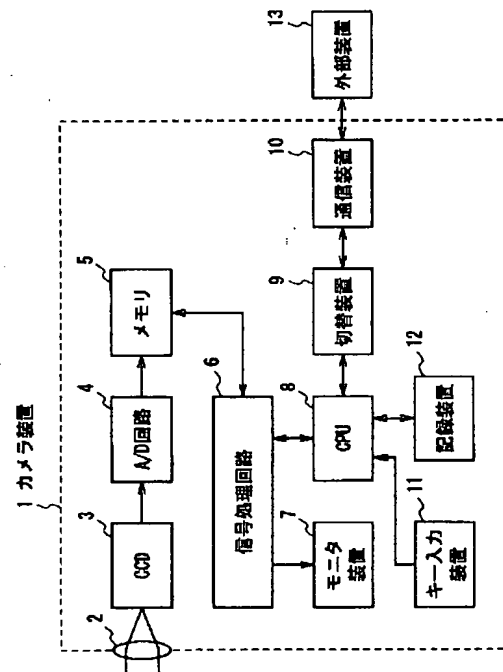
5C052 GA01 GA09 GB01 GE08

(54) 【発明の名称】 イメージング装置

(57) 【要約】

【課題】 カメラなどのイメージング装置を、外部装置からマストストレージデバイスとして認識させる場合と、外部装置からカメラとして認識させる場合を切り替えることのできるイメージング装置を提供すること。

【解決手段】 外部装置13からマストストレージデバイスとイメージングデバイスの両者として認識させるための切替装置9を設け、カメラ装置1の動作モードやキー操作により両者を切り替える。



【特許請求の範囲】

【請求項1】 撮影された光学像を光電変換して得られるイメージデータを蓄積する機能を有するイメージング装置において、光学像を光電変換してなる画像データを記録媒体に記録する記録手段と、

外部装置と接続することにより外部装置と通信可能な通信手段と、

上記外部装置と通信する際に、上記外部装置をして、該イメージング装置を大容量記憶デバイスとして認識させるか、撮像デバイスとして認識させるかを切り替える切替手段とを備えたことを特徴とするイメージング装置。

【請求項2】 請求項1記載のイメージング装置において、

上記切替手段は、

上記イメージング装置の現在の動作モードに基づいて、上記外部装置に対して認識させるモードの切り替えを行うことを特徴とするイメージング装置。

【請求項3】 請求項1記載のイメージング装置において、

上記切替手段は、外部入力操作により、上記外部記憶装置が該イメージング装置を認識する認識モードの切り替えを行うことを特徴とするイメージング装置。

【請求項4】 請求項1記載のイメージング装置において、

上記切替手段は、切り替えたモードが大容量記憶デバイスである場合に、上記イメージング装置の所定の機能の動作を制限する命令を上記イメージング装置に出力することを特徴とするイメージング装置。

【請求項5】 請求項1ないし4のいずれかに記載のイメージング装置において、

上記イメージング装置はカメラ装置であり、上記外部装置との通信手段は、RS232C、USB (Universal Serial Bus)、SCSI、またはIEEE1394であることを特徴とするイメージング装置。

【請求項6】 請求項1ないし5のいずれかに記載のイメージング装置において、

上記記録媒体がディスク状記録媒体であることを特徴とするイメージング装置。

【請求項7】 請求項1ないし5のいずれかに記載のイメージング装置において、

上記記録媒体がテープ状記録媒体であることを特徴とするイメージング装置。

【請求項8】 請求項1ないし5のいずれかに記載のイメージング装置において、

上記記録媒体が着脱可能なPCMCIAカード、CFカード、スマートメディア、SDカード、または内蔵型の半導体メモリであることを特徴とするイメージング装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明はカメラ装置に関し、特に、撮影された光学像を光電変換する光電変換素子を備えたものにおいて、外部装置と通信を行う際にカメラ装置を、外部装置から大容量記憶装置（マストレージデバイス）として扱うことのできる構成を有するものに関するものである。

【0002】

【従来の技術】従来のマストレージデバイスとして外部装置から認識されるカメラ装置の場合、特開2000-307911号公報に示すように、カメラ装置のファイル情報が更新されたとき、ステータスをパーソナルコンピュータに送ることにより、パーソナルコンピュータにファイル情報が更新されたことを知らせ、パーソナルコンピュータ上のファイル情報の表示を瞬時に更新可能とし、瞬時に更新されたファイル情報を利用できるようにしたものがある。このようにすることで、カメラ装置に備わっている画像記録用の記憶メディアを、外部記憶装置の記録メディアとしてパーソナルコンピュータでの利用を容易にすることができる。

【0003】

【発明が解決しようとする課題】従来のイメージング装置（カメラ装置）は以上のように構成されており、PCのような外部装置から、カメラ装置をマストレージデバイスとして認識させた場合には、カメラ装置の記録媒体内に保存されている画像情報をファイル情報として利用することは可能であるが、外部装置からのカメラ装置の制御や、カメラ装置のキー操作による画像の自動転送などの撮像デバイスであるカメラ装置を特徴づけるような機能を実現することはできないなどの問題点があった。

【0004】この発明は以上のような問題点を解消するためになされたもので、外部装置から見てイメージング装置をマストレージデバイスとして認識できるとともに、外部装置よりイメージングデバイスとしての操作を可能とすることができる構成を備えたイメージング装置を提供することを目的とする。

【0005】

【課題を解決するための手段】この発明の請求項1にかかるイメージング装置は、撮影された光学像を光電変換して得られるイメージデータを蓄積する機能を有するイメージング装置において、光学像を光電変換してなる画像データを記録媒体に記録する記録手段と、外部装置と接続することにより外部装置と通信可能な通信手段と、上記外部装置と通信する際に、上記外部装置をして、該イメージング装置を大容量記憶デバイスとして認識させるか、撮像デバイスとして認識させるかを切り替える切替手段とを備えたものである。

【0006】また、この発明の請求項2にかかるイメージング装置は、請求項1記載のイメージング装置において、上記切替手段は、上記イメージング装置の現在の動

作モードに基づいて、上記外部装置に対して認識させるモードの切り替えを行うものである。

【0007】また、この発明の請求項3にかかるイメージング装置は、請求項1記載のイメージング装置において、上記切替手段は、外部入力操作により、上記外部記憶装置が該イメージング装置を認識する認識モードの切り替えを行うものである。

【0008】また、この発明の請求項4にかかるイメージング装置は、請求項1記載のイメージング装置において、上記切替手段は、切り替えたモードが大容量記憶デバイスである場合に、上記イメージング装置の所定の機能の動作を制限する命令を上記イメージング装置に出力するものである。

【0009】また、この発明の請求項5にかかるイメージング装置は、請求項1ないし4のいずれかに記載のイメージング装置において、上記イメージング装置はカメラ装置であり、上記外部装置との通信手段は、RS232C、USB (Universal Serial Bus)、SCSI、またはIEEE 1394であるものである。

【0010】また、この発明の請求項6にかかるイメージング装置は、請求項1ないし5のいずれかに記載のイメージング装置において、上記記録媒体がディスク状記録媒体であるものである。

【0011】また、この発明の請求項7にかかるイメージング装置は、請求項1ないし5のいずれかに記載のイメージング装置において、上記記録媒体がテープ状記録媒体であるものである。

【0012】また、この発明の請求項8にかかるイメージング装置は、請求項1ないし5のいずれかに記載のイメージング装置において、上記記録媒体が着脱可能なPCMCIAカード、CFカード、スマートメディア、SDカード、または内蔵型の半導体メモリであるものである。

【0013】

【発明の実施の形態】(実施の形態1)以下、図面に基づいて本発明の実施の形態1にかかるイメージング装置であるカメラ装置について説明する。図1は本実施の形態におけるカメラ装置の構成を示すブロック図である。図2は前記カメラ装置と前記外部装置とをUSB (Universal Serial Bus) ケーブルを用いて接続した際の関係を示した図であり、図2(a)は前記カメラ装置をマストレージデバイスとした場合の図であり、図2(b)は前記カメラ装置をイメージングデバイスとした場合の図である。

【0014】上記図1において、カメラ装置1には撮影レンズ2が取り付けられ、該撮影レンズ2の光軸上に撮影された光学像を光電変換する光電変換素子であるCCD3が配置されている。この光電変換された画像データは後段のA/D回路4によりアナログデータからデジタルデータに変換される。

【0015】そして、デジタルデータに変換された画像

データはメモリ5に格納され、さらに、メモリ5に格納された画像データはデータを圧縮伸張する信号処理回路6により圧縮される。

【0016】前記信号処理回路6に圧縮された画像データは、CPU8により制御される記録装置12により記録媒体に保存される。記録媒体に記録された画像データは前記CPU8の制御により前記信号処理回路6にてデータを伸張されモニタ装置7にて表示することが可能である。

【0017】前記CPU8は、キー入力装置11からキーの状態を読みこみ、動作モードを決定し、その情報を切替装置9に通知し、それに基づいて前記切替装置9は外部装置13に、前記カメラ装置1をマストレージデバイスとして認識させるか、イメージングデバイスとして認識させるかを切り替える構成となっている。

【0018】通信装置10は、前記外部装置13とデータのやりとりが可能な装置であり、前記切替装置9により切り替えられたデバイス認識モードに従って、記録媒体内のデータを前記外部装置13に送信したり、前記外部装置13から前記カメラ装置1内の記録媒体に記録するためのデータを受信したりできる。

【0019】次に図2を用いて図1と対比させながら説明する。図2(a)は前記カメラ装置1を前記切替装置9により、前記外部装置13からみてマストレージデバイスとして認識させた場合の概念図であり、前記カメラ装置1の記録媒体内に記録されている画像情報はファイル情報として前記外部装置13内の記録媒体に容易に移動、コピー可能である。上記外部装置としては、例えば、汎用アプリケーションソフトウェアにて制御されるPCなどが考えられ、ここでは、カメラ装置1をマストレージデバイスとして認識し、制御するためのマストレージクラスドライバが備わっている。

【0020】図2(b)は、前記カメラ装置1を前記切替装置9により前記外部装置13からみてイメージングデバイスとして認識させた場合の概念図であり、前記外部装置13に前記カメラ装置1専用のアプリケーションソフトウェアを組み込んで、前記カメラ装置1を前記外部装置13から専用のコマンドを発行することにより、カメラ装置1の遠隔操作や、前記カメラ装置1の前記モニタ装置7に表示している画像を自動的に前記外部装置13に転送して表示する操作などを行うことができる。

【0021】上記外部装置としては、例えば、専用アプリケーションソフトウェアにて制御されるPCなどが考えられ、ここでは、カメラ装置1をイメージングデバイスとして認識し、制御するためのイメージングクラスドライバが備わっている。

【0022】図2の場合、前記カメラ装置1と前記外部装置13との通信にUSB (Universal Serial Bus) を使用しており、前記カメラ装置1がマストレージデバイスとイメージングデバイスとの2つのプロダクトIDをも

ち、前記外部装置13に前記プロダクトIDのそれぞれに対応したマスストレージクラスドライバとイメージングデバイスドライバの2つを組み込む場合と、前記カメラ装置1は1つのプロダクトIDしか持たず、前記外部装置13にマスストレージクラスとイメージングクラスの両者の機能を包含したドライバを組み込む場合が考えられる。

【0023】ここでは、前記カメラ装置1がマスストレージデバイスとイメージングデバイスの2つのプロダクトIDをもち、前記外部装置13に前記プロダクトIDのそれぞれに対応したマスストレージクラスドライバとイメージングデバイスドライバの2つを組み込む場合について、その動作について説明する。

【0024】最初に前記カメラ装置1と前記外部装置13との間にUSBケーブルが接続されると、予め決められたデフォルトのデバイスモードでエニュメレーションが開始され、前記外部装置13は前記カメラ装置1をそのデバイスモードで認識する。

【0025】その後、前記カメラ装置1の動作モードの変更やキー操作により、デバイスモードの変更の必要性が発生した場合には、前記CPU8からの情報により、前記切替手段9は一旦、USB接続を電氣的に切断し、再度接続を行う。前記カメラ装置1は、再接続の際に前記外部装置13から新しくもう一方のデバイスモードと認識されるように、エニュメレーション時にもう一方のデバイスモードに対応したプロダクトIDに変更して応答する。すると、前記外部装置13においては、変更されたプロダクトIDに対応したドライバが呼び出され、新しく選択されたデバイスモードで前記カメラ装置1と通信が可能となる。

【0026】再度、元のデバイスモードに戻す場合も同様の動作を行う。なお、前記外部装置13にマスストレージクラスとイメージングクラスの両者の機能を備えたドライバを組み込む場合には、電氣的なUSB接続を一旦切断する必要はなく、前記外部装置13から前記カメラ装置1の状態を取得しにいったときに、前記カメラ装置1がデバイスモードの切り替え応答をすることにより、前記外部装置13にデバイスモードの切り替えを通知する。

【0027】上記デバイスモードの切り替え通知の内容に基づいて前記外部装置13が、前記カメラ装置1をマスストレージデバイスとして認識するか、イメージングデバイスとして判断するかを選択すればよい。

【0028】図3はカメラ装置1がイメージングデバイスの状態にあるときの動作フローを示す図であり、ステップS301において前記カメラ装置1が撮影、記録可能なモードであると判定された場合には、ステップS302に進んで前記切替装置9をイメージングデバイスモードに切り替えて前記外部装置13からは前記カメラ装置1をイメージングデバイスとして認識させ、前記カメ

ラ装置1専用のアプリケーションソフトウェアを前記外部装置13のオペレーションシステムに組み込み、専用のコマンドにより、撮影開始やホワイトバランスや絞り、オートフォーカスの設定やズーム操作などを前記外部装置13から遠隔操作したり、前記カメラ装置1の前記モニタ装置7に表示されている画像を、前記カメラ装置1のキー操作により、自動的に前記外部装置13に送信できるようにして処理を終了する。

【0029】一方、上記ステップS301において記録モード中でないと判定された場合には、ステップS303に進み、ここで、前記カメラ装置1が再生モードにあると判定された場合には、ステップS304に進んで前記切替装置9をマスストレージデバイスモードに切り替えて前記外部装置13からは前記カメラ装置1をマスストレージデバイスとして認識させ、前記カメラ装置1内の記録媒体に記録されている画像情報をファイル情報として前記外部装置13内の記録媒体に移動したり、コピーしたりして利用することができるようにする。

【0030】また、上記ステップS303において再生モード中ではないと判定された場合、すなわち装置が記録中でも再生中でもない場合には、ステップS302に進んで装置をイメージングデバイスモードにセットして処理を終了することになる。

【0031】なお、ここでは、現在のモードが記録、再生モードにある場合の、外部装置13からみたカメラ装置1の動作モードの切り替えの例を説明したが、該カメラ装置1の動作モードの切り替え方法はこれに限られるものではなく、切り替え条件は任意であり、自由に選択できることはいうまでもない。

【0032】このように、本実施の形態1によれば、カメラ装置1に、外部装置13と通信する際に、カメラ装置1をマスストレージデバイスとして認識させるか、イメージングデバイスとして認識させるかを切り替える切替手段9を設けたから、カメラ装置1をマスストレージデバイスとして用いて、そのファイル情報を利用できるとともに、カメラ装置を、外部装置13からその撮影、記録、再生などの制御を行い、カメラ装置としても利用できるものとなる。

【0033】(実施の形態2)次に本発明の実施の形態2にかかるイメージング装置であるカメラ装置について説明する。基本的な構成は図1で示したカメラ装置と同様であるが、本実施の形態2では、切替装置9の切り替えの判断をキー入力装置11からのキー情報により行うようにしている点が特徴である。

【0034】以下、図4を用いて動作について説明する。上記入力装置11で用いるキーについては、実際に対応した物理キーを設置してもよいし、メニュー形式で選択可能なようにしてもよい。この方法ではユーザがマニュアル操作でマスストレージモードとイメージングモードを任意に選択することができるため、カメラ装置として

ユーザ独自のより幅広い使用方法を考えることができる。

【0035】前記実施の形態1において、前記カメラ装置1がマスストレージデバイスとして認識された場合には、前記外部装置13からは前記カメラ装置1の記録メディア内の画像ファイルの一覧がモニターできるだけであり、前記外部装置13から前記カメラ装置1のキーの状態や動作モードを認識することはできない。

【0036】したがって、カメラ装置1がマスストレージデバイスとして認識されている場合に、例えば、前記カメラ装置1が自身のキー入力により、撮影や記録動作を行った場合に、同時に前記外部装置13が前記カメラ装置1と通信しようとする、前記カメラ装置1において処理の競合が発生し、前記カメラ装置1あるいは前記外部装置13の少なくともいずれか一方が異常な動作を引き起こす恐れがある。

【0037】それを防止するために、前記カメラ装置1がマスストレージデバイスとして認識された場合には、ステップS401において、前記カメラ装置1において、デバイスモードをイメージングデバイスに切り替えるために必要なキー以外のキー操作を禁止し、ステップS403に進んでマスストレージデバイスモードにセットする。

【0038】一方、前記カメラ装置1がイメージングデバイスモードにある場合においては、前記外部装置13からは前記カメラ装置1の専用のアプリケーションソフトウェアで制御されるため、前記カメラ装置1のキー操作や動作モードを認識することができ、前記カメラ装置1の撮影、記録動作が前記外部装置13との通信と競合することはない。したがって、ステップS402に進んでイメージングデバイスモードにセットし、前記カメラ装置1のキー操作は禁止されない。

【0039】このように本実施の形態2によれば、キー入力装置11によりカメラ装置1をマスストレージデバイスモードとイメージングデバイスモードとに切り替え設定することができるようにしたので、マスストレージデバイスモードにて認識されているときに、不用意にイメージングデバイスモードによる操作が行われて、カメラ装置1に対して要求された処理が競合することによるカメラ装置1または外部装置13のトラブルの発生を防止することができる。

【0040】なお、上記各実施の形態では、装置間の接続がUSB接続である場合について説明を行ったが、同様の機能を実現できる他のインターフェイス、またはプロトコルを持つ接続にも同様に適用することができることは言うまでもない。

【0041】また、この実施の形態については、カメラ装置だけでなく、イメージング装置とそのデータを蓄積するマスストレージデバイスとの2つのデバイスクラスの機能を有するデバイスについても同様に適用すること

ができる。

【0042】

【発明の効果】以上のように、本発明にかかるイメージング装置によれば、撮影された光学像を光電変換して得られるイメージデータを蓄積する機能を有するイメージング装置において、光学像を光電変換してなる画像データを記録媒体に記録する記録手段と、外部装置と接続することにより外部装置と通信可能な通信手段と、上記外部装置と通信する際に、上記外部装置をして、該イメージング装置を大容量記憶デバイスとして認識させるか、撮像デバイスとして認識させるかを切り替える切替手段とを備えたものとしたので、イメージング装置の記録媒体に記録された画像ファイル等を外部装置内の記録媒体に移動、コピーするというファイル操作を容易に実現することができ、かつ、外部装置からのイメージング装置の遠隔制御やイメージング装置からのキー入力による画像の自動転送などのカメラ独自の機能を容易に実現することができるという効果が得られる。

【0043】また、本発明にかかるイメージング装置によれば、上記切替手段は、切り替えたモードが大容量記憶デバイスである場合に、上記イメージング装置の所定の機能の動作を制限する命令を上記イメージング装置に出力するようにしたので、イメージング装置の動作モードによって要求された処理が競合することによる異常動作を防止することができ、装置としての使い勝手を向上することができるという効果が得られる。

【図面の簡単な説明】

【図1】本発明の実施の形態1にかかるイメージング装置であるカメラ装置の構成を示すブロック図である。

【図2】上記カメラ装置と外部装置との関係を示す図である。

【図3】上記カメラ装置において、カメラ装置がイメージングデバイスの状態にあるときの動作フローを示す図である。

【図4】上記カメラ装置において、前記切替装置の切り替えの判断をキー入力装置からのキー情報により行うようにしたときの動作を説明するフローを記載した図である。

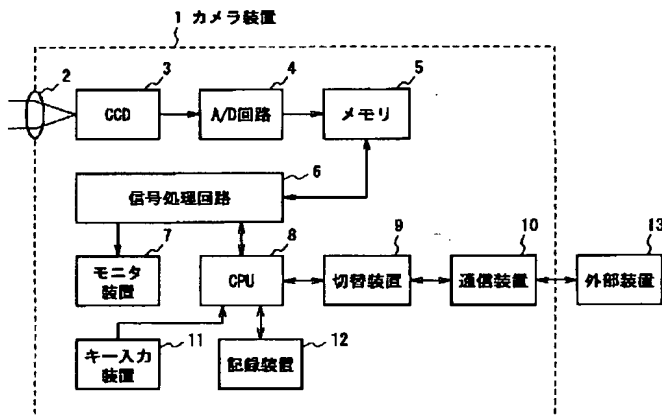
【符号の説明】

- 1 カメラ装置
- 2 撮影レンズ
- 3 CCD
- 4 A/D回路
- 5 メモリ
- 6 信号処理
- 7 モニタ装置
- 8 CPU
- 9 切替装置
- 10 通信装置
- 11 キー入力装置

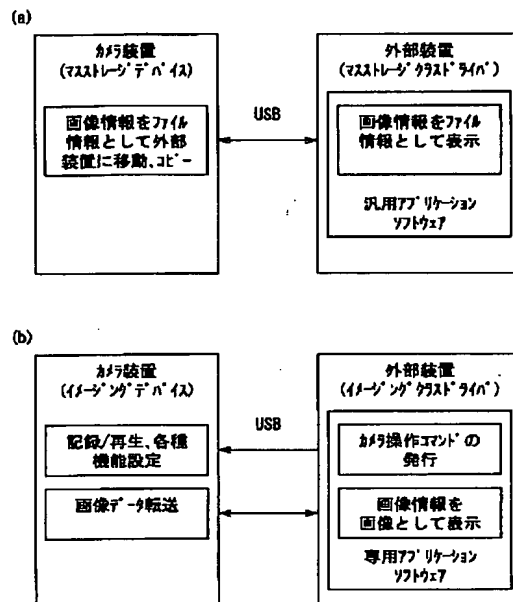
1.2 記録装置

1.3 外部装置

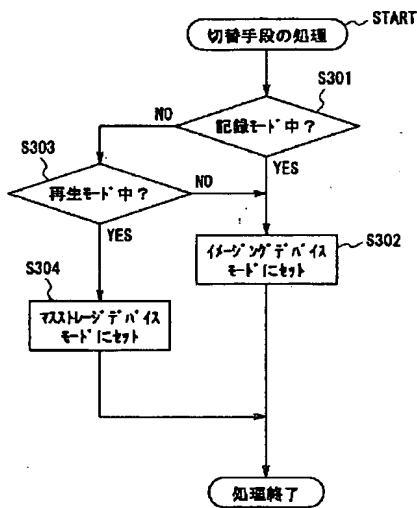
【図1】



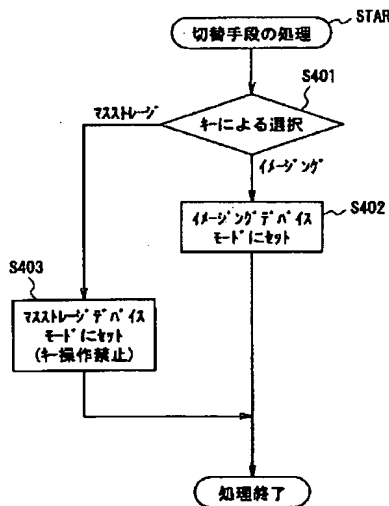
【図2】



【図3】



【図4】



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